

specification (reference should be to the substitute specification), applicants describe acrylamide as a monomer having a heat-reactive functional group and which can be used as one of the first and second monomers forming the acrylic copolymer, heat-reactive resin. Applicants wish to emphasize that such a copolymer (resin) is one of the two components of their “adhesive layer” defined by claim 1 as “curable by exposure to ionizing radiation. As the Examiner further notes, if acrylamide is used as the monomer in the resin-forming admixture described in the first five lines at page 2 of the translation of JP ‘097, and then cured, the result might be a heat-reactive resin in the form of an acrylic copolymer, i.e., one of the components forming applicants’ curable adhesive layer as defined by claim 1.

However, the examiner is confusing the curable resin composition described at the top of page 2 of the translation with the cured resin product obtained therefrom. Only the cured resin product of JP ‘097 would contain what the examiner characterizes as the acrylic copolymer, heat-reactive resin. A distinction must be drawn between the acrylamide monomer-containing curable resin as described at the top of page 2 of the translation of Japanese ‘097 and the cured product obtained therefrom.

In the uncured admixture which forms the cured resin layer, as described at the top of page 2 of the translation of Japanese ‘097, acrylamide, if present, would be in the form of a monomer. Acrylamide is characterized by the Japanese reference as one of “examples of the monomer.” Thus, in the uncured composition taught at the top of page 2 of the Japanese reference, there would be no “acrylamide containing resin” (the

examiner's characterization) and no "heat reactive resin" in the form of "an acrylic copolymer" as recited by applicants' claim 1. On the other hand, in the cured resin product obtained by UV curing or EB curing of that composition of JP'097, assuming, arguendo, that acrylamide is used as the monomer and that the result is a heat-reactive resin, that cured product would contain no "ionizing radiation curable resin" and would not be "curable by exposure to ionizing radiation" in accordance with the definition of the "adhesive layer" in applicants' claim 1. The examiner is improperly including in the curable resin of the Japanese reference an acrylamide containing resin which is formed only after the curing of that resin.

At the middle of page 3 of the Office Action the examiner writes: "For claim 1, it should be noted that: (1) EB curing of monomer having an ethylene unsaturated bond is inherently a free radical polymerization process." However, the examiner overlooks the fact that the EB curing of the Japanese reference is applied to form a "cured resin layer." In contrast, in applicants' claim 1 the resin formed by radical polymerization is only one component (said heat-reactive resin) of the curable adhesive layer. In other words, the examiner is confusing a cured resin layer of the reference with a curable adhesive layer containing such a radical polymerized resin as one component thereof.

2. JP '097 Does Not Teach or Suggest Any Curable Layer Containing Two Different Resins

Again applicants emphasize that claim 1 here recites "said adhesive layer being curable by exposure to ionizing radiation."

At page 3 of the Office Action the examiner writes:

JP '097 expressly teaches that the prepolymer, oligomer, and monomers can be mixed arbitrarily to prepare a coating composition (translation, page 2, second paragraph)

As the examiner has noted elsewhere, JP '097 also teaches that acrylamide is one of the monomers which may be used in the above-described reaction mixture. Of course, the product ("cured resin layer") obtained by UV or EB curing of that reaction mixture is a single, homogeneous resin. Assuming, arguendo that such a cured single homogeneous resin is a heat-reactive resin, how would JP '097 lead one skilled in the art from that homogeneous cured layer to the adhesive layer of applicants' claim 1 defined (1) as "curable" and (2) as containing two different resins? There is no such teaching or suggestion in JP '097. The examiner is lifting the teaching of "a mixture" (a teaching of a single reaction mixture) totally out of context.

B. The Allegedly Obvious Modification of JP '097 in View of Mori  
Would Not Lead to the Present Invention

1. Mori does not teach a "heat-reactive resin" (acrylic copolymer) having a hydroxyl group.

At page 4, lines 11 and 12 of the Office Action the examiner writes:

and prepolymers include polyurethane acrylates comprising a pendant hydroxyl group such as 2-hydroxyethyl acrylate (column 4, lines 57-60).

In the teaching of Mori at column, lines 57-60, it is the acrylate monomer reactant which is described as having the pendant hydroxyl group, not the polyurethane acrylate prepolymer obtained therefrom. Indeed, the acrylate must react through the

pendant hydroxyl group (thereby eliminating same from the product) because the product (polyurethane acrylate) is described as an acrylate, i.e., as having intact acrylate groups. As evidence that the hydroxy acrylate reacts with the diisocyanate through its hydroxyl group, see the abstract of U.S. 4,480,079 (Attachment No. 6 with applicants' response of February 28, 2005).

More specifically, Mori expressly teaches that polyurethane acrylate can be obtained by reacting an isocyanate compound such as tolylene diisocyanate with an acrylate having a pendant hydroxyl group, such as 2-hydroxyethyl acrylate (column 4, lines 57-59). This reaction is not a free radical reaction and the thus polymerized polyurethane does not have a pendant hydroxyl group because the free hydroxyl group is consumed in forming the urethane bond by the reaction with isocyanate.

In connection with the molecular weight, the examiner appropriately pointed out that polyurethane acrylate described by Mori et al is merely an optional "prepolymer" for forming the curable compound, not a formed (i.e., cured) heat-reactive resin (page 5, the last paragraph). Thus, the examiner admits that the protective layer of Mori does not include a heat reactive resin before the layer is cured. Again, the adhesive layer of the invention is not cured and includes a heat reactive resin.

2. Substitution of a hydroxy-containing monomer of Mori et al for a monomer of JP '097 would not lead to the present invention.

At page 4 of this latest Office Action the examiner also writes:

It would be obvious to one of ordinary skill in the art to modify [substitute?]

the irradiation curable monomers of JP '097 with known equivalent hydroxyl group containing acrylate monomers as taught by Mori."

Even if the examiner's statement quoted above is correct, it would not be relevant here. Such a substitution of monomers would not give the heat reactive resin which is defined by claim 1 as a copolymer of an acrylate or methacrylate monomer and a second monomer having a hydroxy group. How does the monomer substitution suggested by the examiner lead to such a copolymer of two different monomers? In the cured product of JP '097? As noted above the cured product of JP '097 ("cured resin layer") is neither a curable layer nor a mixture of two different resins.

C. The Teachings of Mori Are Improperly Combined With Those of JP '097 In the Manner Adopted by the Examiner

The examiner has repeatedly argued that JP '097 "expressly teaches that the suitable composition for the curable adhesive layer is the same as the curable resin used to form the cured resin layer." The translation of Japanese '097 actually states that "the aforementioned ionizing radiation curable resin can be used for the resin constituting the curable adhesive layer." (bottom of page 2 of the translation). However, the two layers cannot be the same because JP '097 describes its adhesive layer as "curable" (until after separated from the "releasing sheet") whereas it describes the protective layer of the transfer element as a "cured resin layer."

Assuming, arguendo, that both the "cured resin layer" which provides "a good surface property" and the adhesive layer of JP '097 were the same, disregarding the fact that one has been cured and the other has not been (until after separation from the

“releasing sheet”), it would not logically follow that any modification in view of Mori et al would be applied to both layers. The two layers of JP ‘097 are intended to provide different functions. The adhesive layer is intended to provide adhesiveness to the object to which the layers are transferred and the “cured resin layer” is intended to provide “a good surface property.” Assuming, arguendo, that Mori et al would motivate one skilled in the art to modify one of the two layers, it does not logically follow that such motivation would lead one skilled in the art to modify both layers, simply because (allegedly) the two layers are the same prior to modification.

At column 1, lines 34-37 Mori et al. teach:

Generally, a protective film, for prevention of damage to the pattern and to impart durability, is used over the materials used for forming the pattern, such as a photo mask and lith film.

Thus, the teachings of Mori et al. are directed to a protective film providing “good wear resistance” and “hardness” which are the criteria that Mori et al. use in evaluation of their protective film products. See the tests for “wear resistance” and “pencil hardness” described in column 7 of Mori et al. and the evaluations of the Mori et al. products for same set forth in Tables 1-3. Accordingly, it might be argued that it would have been obvious to incorporate the compounds disclosed by Mori et al. into the “cured resin layer” of Japanese ‘097 because “the protective film” of Mori et al. and the “cured resin layer” of Japanese ‘097 are intended to provide the same function. However, it would be nonsensical to modify any adhesive layer to impart the adhesive layer with any

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quality attributed by Mori et al. to the "protective film."

In conclusion, it is respectfully requested that the examiner reconsider the rejections of record with the view toward allowance of the pending claims.

Respectfully submitted,

BACON & THOMAS

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George A. Loud

Registration No. 25,814

Atty Dkt: MARU3004

625 Slaters Lane  
Fourth Floor  
Alexandria, VA 22314  
(703) 683-0500